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# EVALUATION OF POSSIBLE EFFECTS ON THE STANDLEY LAKE BALD EAGLES DUE TO INTERSPECIFIC AGGRESSION BY OTHER RAPTORS AND HUMAN DISTURBANCES

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## INTRODUCTION

This short term data collection project was undertaken to evaluate the likelihood that the presence of other raptor species would impact the success of the Standley Lake bald eagles' attempt to nest Effects of interspecific interactions between bald eagles and other raptor species can be subtle as compared to the obvious responses to overt human intrusion Most raptor species are aggressive by their very nature, and because the niche of an avian predator is quite specialized, competition between species can develop when several species are concentrated around, and competing for, limited nesting sites or a common food source This competition can be in the form of intimidation displays, usurping nest sites, and other actions up to and including actual attack It was considered important in assessing possible cumulative impacts on the success of the Standley Lake bald eagles' nest to consider the likely results of interspecific aggression The other important source of stress that must be considered when assessing the influences on the Standley Lake bald eagles is their sensitivity to human disturbance, which has been well established during nesting studies on the species (Fyfe and Olendorff 1976, Grubb and King 1991, Fraser 1985)

## INTERACTIONS WITH OTHER RAPTOR SPECIES

Several species of large raptors occupy the general vicinity of Rocky Flats Plant and Standley Lake either seasonally or year-round Seasonal residents include bald eagles and rough-legged hawks in the winter, and peregrine falcons and Swainson's hawks during the breeding season Year round residents include golden eagles, red-tailed hawks, prairie falcons, ferruginous hawks and great horned owls A number of smaller raptor species are either full or part-time residents of the area as well Of the species identified above, only the bald eagles and rough-legged hawks have not been recorded as nesting in the general vicinity of Rocky Flats

The most notable of the large raptor species for aggressively defending nests and nesting territories are golden eagles, red-tailed hawks, and the falcons Interspecific aggression can be an important factor in nesting and brood rearing success Identifying the locations of local red-tailed hawk, golden eagle and falcon nesting and foraging territories, allows evaluation of the consequent interspecific competition that may play an important part in the ability of the Standley Lake bald eagles to nest successfully should they make a persistent attempt at the current site

Golden eagles can be very aggressive in attempting to drive competing raptors from their territories Golden eagle nesting studies from as far back as 1883 (Figgs and Lederer 1986) recorded golden eagle nests in essentially the same locations as have recent studies Figure 1-1 illustrates the zone in the foothills occupied by cliff nesting raptors including golden eagles, prairie falcons, and peregrine falcons (Halleck, D

1993, Pers Comm , Mauraga, R , 1993 Pers Comm , Weber, D 1993 Pers Comm , Wickman, A 1993 Pers Comm ) The nesting territories are typically approximately five miles in diameter, and are spaced nearly evenly along the cliffs of the foothills In an attempt to protect these sites, the exact locations of current and historic nest sites are not disclosed by the wildlife management agencies Recent records report several active golden eagle's nests between Boulder and Golden in areas of steep cliffs in the Front Range and foothills, including some canyons, such as Coal Creek Canyon, that extend to the west from the piedmont Foraging territories of these species are much larger, and generally occupy elliptical areas that stretch to the east from the nest sites, often overlapping each other Some foraging territories extend into the Standley Lake area

Prairie and peregrine falcons also nest within 7 to 12 miles of Rocky Flats Plant There is an active peregrine falcon's nest near Boulder, and two active prairie falcon nesting locations north and south of the mouth of Eldorado Canyon in the state park Both species of falcon hunt within the area where bald eagles have been observed The falcons are territorial around nest sites, but the known falcon nest locations in the Flatirons are not near enough to the bald eagle nest location at Standley Lake to cause territorial conflict between the species

Peregrine falcons migrate south and do not compete for territory or forage with the bald eagles during the winter Prairie falcons have been observed in the same locale as the bald eagles, but the small number of prairie falcons in the area probably does not greatly impact foraging success of the bald eagles

Golden eagles have been observed harassing the pair of bald eagles, as have red-tailed hawks, in the area of Standley Lake and Mower Reservoir A courting pair of golden eagles, in fact, actually drove the bald eagles from the nest site, and sat on the nest and nest tree for a period of time during one observation session Golden eagles were observed displaying courtship behavior on several occasions between three-quarters of a mile and two miles from the bald eagles' nest during the time the bald eagles occupied the area

A pair of red-tailed hawks built a nest, and was incubating eggs by mid-April, in a cottonwood tree close to Mower Reservoir Red-tailed hawks are territorial, and will vigorously defend nesting territories from other raptors and humans It is likely that these were the red-tailed hawks observed harassing the bald eagles when the bald eagles perched on their favored trees on the Mower Reservoir dam A red-tailed hawk was also often observed in the hawk nest tree during that time period The nest territory of this pair of red-tailed hawks was most likely established before the bald eagles departed, and the bald eagles were often within the nesting territory when the agonistic behavior (interspecific aggression) of the red-tailed hawks was observed

The presence of other raptor species may also be beneficial to the bald eagles at times During the winter, bald eagles were observed attempting to rob ferruginous hawks of prey On several occasions the evidence indicated that the bald eagles had seized prey from ferruginous hawks One observer reported seeing a bald eagle stoop on a ferruginous hawk with a prairie dog near the Rock Creek Subdivision, and knock the ferruginous hawk to the ground While the ferruginous hawk was recovering from the blow, the bald eagle flew off with the prey (L Jordan 1993 Pers Comm ) It is interesting to note that, although the bald eagles departed within the normal migration time period, the timing of their departure coincided closely with the departure of the numerous ferruginous hawks that had wintered in the vicinity Bald eagles frequently snatch prey from ospreys where the two forage together, and are notorious thieves of prey from each other and other raptor species Bald eagles also opportunistic scavengers

## HUMAN INFLUENCES

Human disturbance is a factor that will significantly impact nesting success of many raptors, but will be most pronounced with eagles and falcons Studies of nesting bald eagles indicate that human approach on the ground within 300 meters will cause responses by bald eagles that vary from alertness to departure Aircraft will cause significant disturbance response if the flight comes within 175 meters of a nest Other human activities such as boating will cause similar responses at similar distances as do humans on the ground (Grubb and King 1991)

Human disturbances that occur routinely in the vicinity of the Standley Lake bald eagles' nest include 1) recreational activities such as ice fishing, hiking, birding, kite flying, model airplane flying, bank fishing, boating, waterskiing, golfing, dog-walking, and picnicking, 2) residential activities such as lawn mowing, yard work, vehicular traffic, and parties, 3) farming activities such as horse training, plowing, haying, and irrigation, and 4) industrial and other activities such as small aircraft overflight, earthmoving, and home construction The combination of these human activities may very well preclude the possibility of the Standley Lake bald eagle nest site being successful While the bald eagles did tolerate the high level of human activity in the area during the colder weather, the level of human activity increases with warmer weather, and this may not be tolerable to the birds Observations of the bald eagle pair indicated that these birds were not habituated to humans, to the extent that a human on foot within the critical distance of 300 meters was not tolerated, and the eagles generally took to flight during such occasions

Nesting success is normally influenced by such factors as the suitability of the nest location, protection from predators, abundance of the food supply, limited competition,

and other ecological factors The Standley Lake location provides a suitable nest tree, a sufficient food source with the presence of the prairie dog colonies and the proximity of the lake, and limited competition from other raptors The nest location is, however far from isolated There are several residences within a few hundred meters, roads on two sides, a county airport immediately to the north whose flight path passes over the nest, and many other manifestations of suburbia nearby

## NEST AFFINITY

The fact that the bald eagle pair was never observed to remain at the nest site over night raises questions as to their actual affinity to the nest During the period of observation, the bald eagles returned to the roost at Eldorado Canyon each night Bald eagles, and other raptors will generally remain at the nest location as egg laying and incubation approach These bald eagles rested and perched on the nest tree and in trees adjacent to the nest tree during the daytime, but did not roost at the site This may have been due to a lack of nest affinity or to the human disturbance in the area

## CONCLUSIONS

The presence of other raptor species foraging and nesting in the Standley Lake vicinity undoubtedly adds to the disturbance and stress experienced by the pair of bald eagles, but the significant human presence and disturbance in the vicinity of the Standley Lake nest may be the limiting factor to the success of the nest The stress level induced by human activities will contribute the most antagonistic impact to the nesting success of bald eagles at this site The pair of bald eagles at Standley Lake did not demonstrate habituation to the human profile or to human activity within 300 meters When approached they would depart Because of this lack of habituation, it is unlikely that this pair of bald eagles will nest successfully at the Standley Lake site

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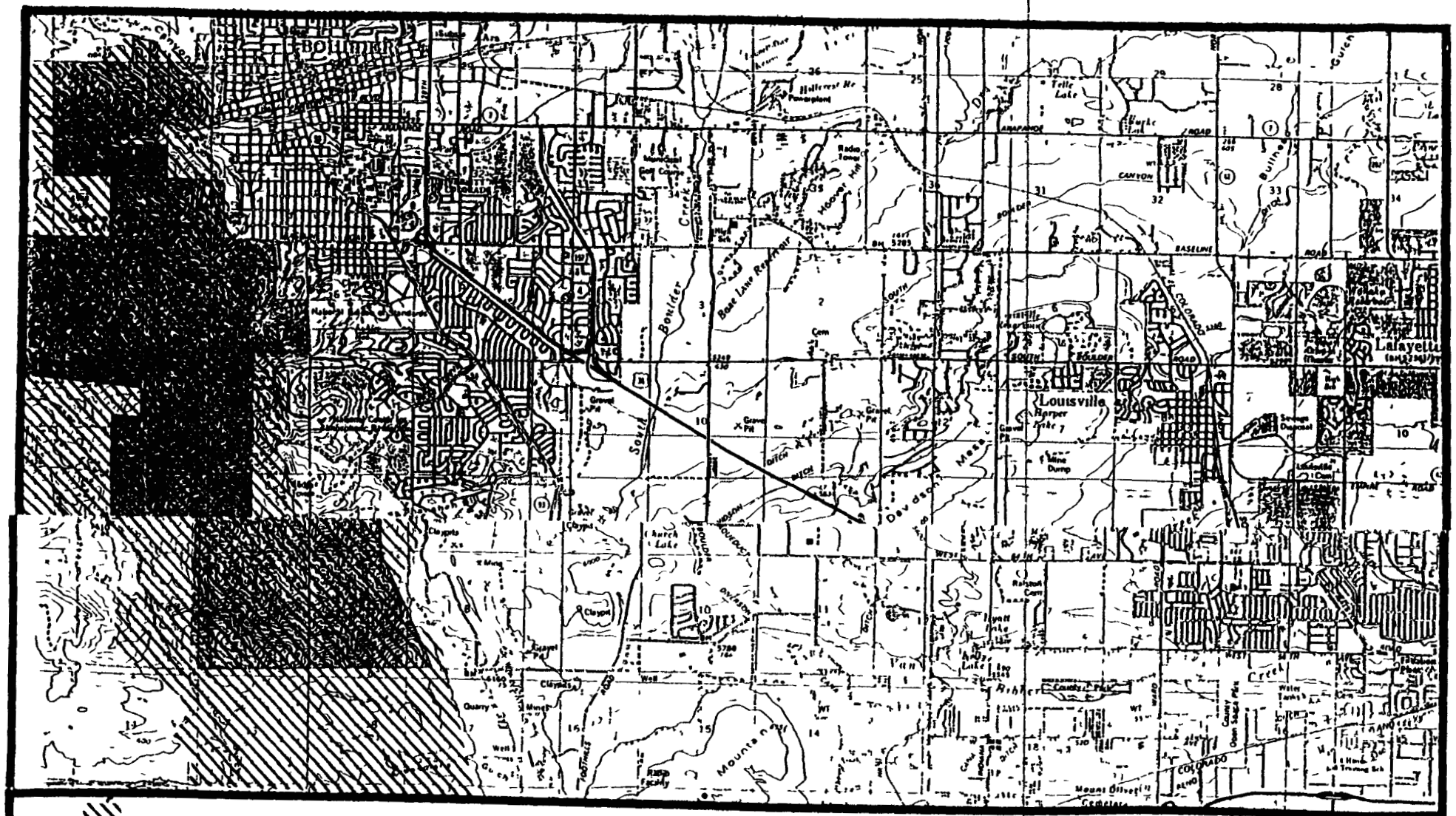


Figure 1-1 Historic and Recent Golden Eagle, Prairie Falcon, and Peregrine Falcon Nesting Areas Within the Rocky Flats Plant Sphere of Influence